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10/032,989	12/27/2001	Ki Bong Song	5882p008	9237

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EXAMINER
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TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 12/23/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/032,989

Applicant(s)

SONG ET AL.

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of the invention of Group II, Claims 8-16 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1-7 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

### *Specification*

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method of Manufacturing a Head for Recording and Reading Optical Data.

4. The abstract of the disclosure is objected to because the abstract is not directed to the claimed invention, i.e. method, and the use of implied phrases, i.e. "present invention". Correction is required. See MPEP § 608.01(b).
5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.**

Extensive mechanical and design details of apparatus should not be given.

### *Claim Objections*

7. Claims 8, 10 and 13 are objected to because of the following informalities.

In Claim 8, the term "prove" (line 9) appears to be misspelled and should be recited as -- probe--.

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In Claim 10, the phrases "of its lower plane" and "of its upper plane" (both occurrences at lines 3-4) are awkwardly worded and should be replaced with --of a lower plane of said aperture-- and --of an upper plane of said aperture--, respectively.

In Claim 13, the phrase of "material a third" (line 3) is awkwardly worded. It appears that the phrase should be recited as --material of a third--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 12, 13 and 16/12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 12, the latter recitation of "a thin metal film" (line 6) is unclear if this is referring to the previous recitation of "a thin metal film" (line 2). How many thin metal films are there?

In Claim 13, the phrase of "of which is great" (lines 3-4) is misleading, confusing and simply not understood as the phrase is used to describe some sort of relationship of the non-linear material. Is the phrase really necessary?

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 8, 9, 11-13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyanaga 5,843,844.

Miyanaga discloses a method comprising: providing a silicon substrate 5 (in Fig. 2a) on which a silicon oxide film 7 and a silicon layer 6 are stacked; etching the bottom of the silicon substrate by a given depth to form an opening (see sequence of Figs. 3a-3b and col. 7, lines 38+); forming an aperture having a given slant angle in the silicon deposition layer 6 to eventually be located over the opening (see Fig. 2b); forming a probe (wire pattern 11 in Fig. 3a) in the silicon deposition layer 6 around the aperture exposed through the opening; and burying the aperture with a non-linear material (silicon oxide layer 8 and resist pattern 9 in Fig. 2c), which meets all of the limitations of the claimed invention.

With respect to the process steps being drawn to “head for recording/reading optical data”, these limitations recited in the preamble of the claims are intended use limitations and have not been given patentable weight since the body of the claims do not depend upon the preamble for completeness and the process steps are able to stand alone. *In re Hirao*, 535 F.2d 67 190 USPQ 15 (CCPA 1976).

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Regarding Claim(s) 9, in forming the aperture, the material of the silicon substrate remaining in the opening is completely removed to expose a bottom portion of the probe (wire pattern 11) as shown in Figure 3b.

Regarding Claim(s) 11, the probe is made of the silicon deposition layer 6 and is formed by etching the silicon deposition layer around the aperture exposed through the opening (see col. 7, lines 2+) at which a slant angle at the right portion of the aperture is the same as the slant angle of the left portion of the opening (see comparison of Figs. 2b and 3b).

Regarding Claim(s) 12, as best understood, the probe is made of a thin metal film (wire pattern 11), which is formed by: etching the silicon deposition layer 6 around the aperture exposed through the opening by a given depth (see col. 7, lines 2+); and forming the thin metal film 11 of a probe shape in the silicon deposition layer exposed through the opening.

Regarding Claim(s) 13, being that the non-linear material includes a resist pattern, the material of this resist pattern can be broadly said to be a "self-focusing phenomenon". The materials making up layers 8, 9 each inherently have "third non-linear coefficient(s)".

Regarding Claim(s) 15, after the probe 11 is formed, Miyanaaga further teaches forming a thin metal film (wire pattern 13) on the silicon deposition layer 6 including the aperture.

### ***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 10, 14, 16/12 and 16/14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyanaga.

With regards to Claims 10, 14 and 16, the dimensions of the reverse-trapezoidal shape of the aperture, the material and temperature of the non-linear material, and the material of the thin metal film, are all considered to be effective variables within level of ordinary skill in the art involving the above manufacturing conditions. The specific parameters of the aperture having dimensions of a lower plane (10-100 nm) and an upper plane (1-100  $\mu\text{m}$ ), the material and temperature of the non-linear material having  $\text{As}_2\text{S}_3$  at 120°C, and the thin metal film being made of Al, are all considered to be effective variables to achieve desired results through routine experimentation. *In re Aller*, 220, F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Therefore, the limitations drawn to the above specific parameters have not been given patentable weight or would have been an obvious improvement over Miyanaga through routine experimentation.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9302.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

A handwritten signature in black ink, appearing to read 'A. Dexter Tugbang', with a stylized flourish at the end.

**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

December 12, 2003